Tasking and Subscriptions

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ISO 19115 Support for Tasking and Subscriptions

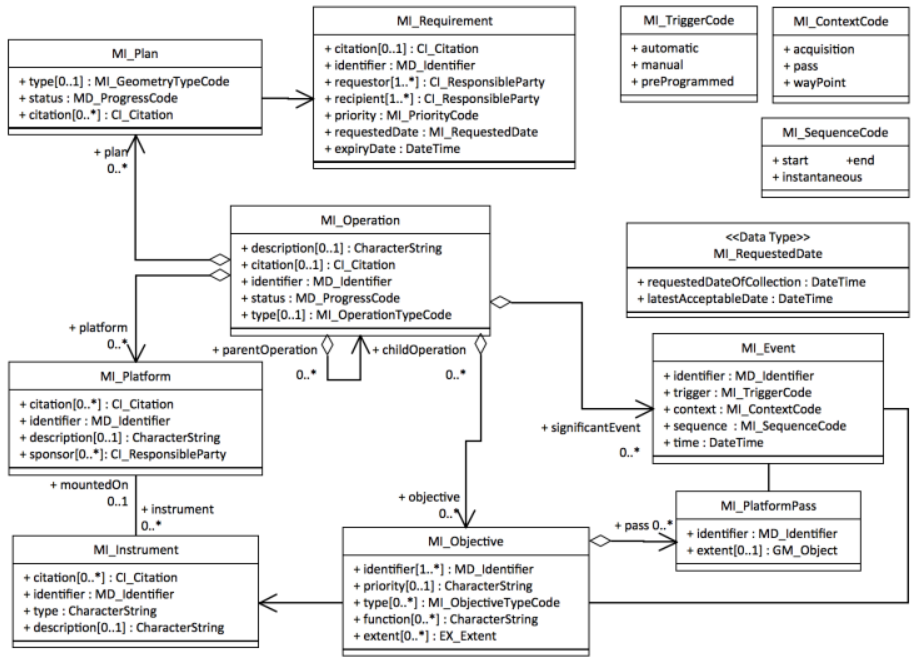
ISO 19115 supports granule, collection and service-level documentation of tasking and subscriptions. For the most part these are described in MI_AcquisitionInformation. MI_AcquisitionInformation is aggregated by MI_Metadata which is a subclass of MD_Metadata. MI_AcquisitionInformation aggregates:

- MI_Instrument: designations of the measuring instruments used to acquire the data
- MI_Operation: designations of the overall data gathering program to which the data contribute
- MI_Platform: designations of the platform from which the data were taken
- MI_Objective: the characteristics and geometry of the intended object to be observed
- MI_Requirement: the user requirements used to derive the acquisition plan
- MI_Plan: the acquisition plan that was implemented to acquire the data

Concepts

The ISO 19115-2 Acquisition Details model is a small section of the ISO Standard that supports the description of "operations". These were originally conceived in the context of military exercises aimed at collecting information about certain objectives. An operation has certain objectives that are observed using certain instruments and there are plans that satisfy certain requirements. Figure 1 reflects the full MI_AcquisitionInformation UML diagram.

Figure 1

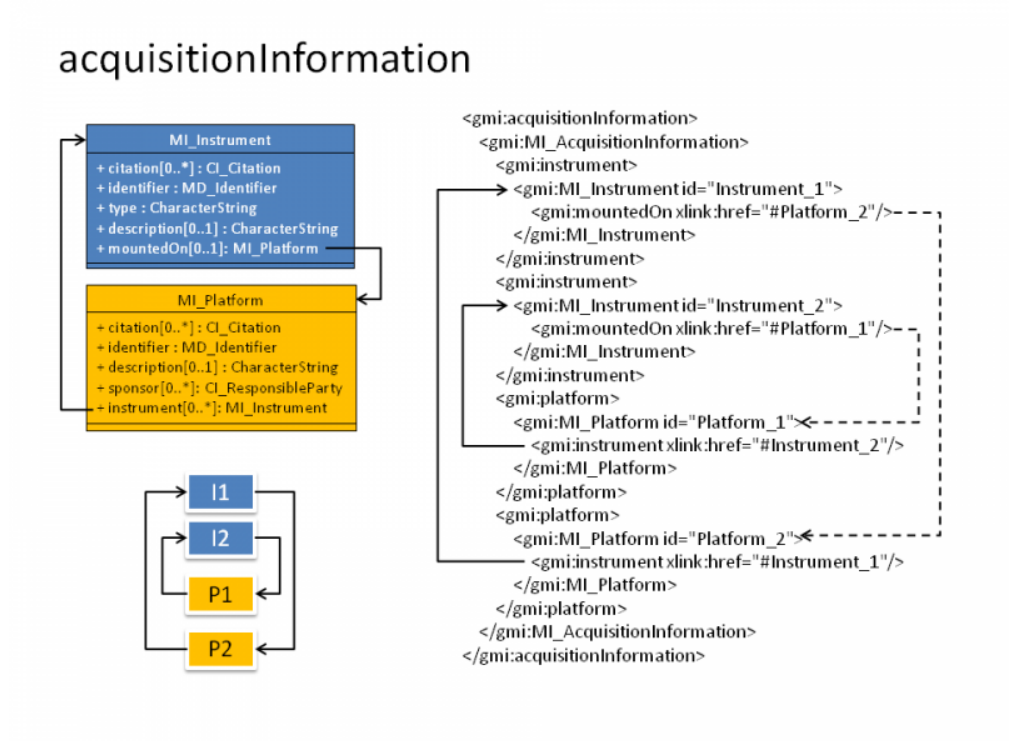


Environmental observations share many of these concepts. For NASA, an objective might be “To Quantify Global Biomass”, an operation might be reflected in the execution of a particular mission as recommended in the Decadal Survey, for example the SMAP mission. There then would be plans to fulfill the mission requirements, for example ISO 19115 metadata compliance or annual cloud-free stereo coverage of the boreal forest.

Platforms and Instruments

When documenting the acquisition information, it is important to correctly author the XML for the platforms and instruments. A dataset with two platforms and two instruments is shown schematically in the second Figure

Figure 2



. They are related using the MI_Instrument/mountedOn and MI_Platform/instrument elements in the UML Diagram. In this case Instrument_1 is mounted on Platform_2 and Instrument_2 is mounted on Platform_1, as indicated by the arrows in the lower left. The XML that describes these relationships is shown on the right. Only the identifiers and references are included for simplicity. The Platforms and Instruments are identified using id = Identifier elements and the references are identified using xlink:href=#Identifier.

Addendum

In addition to the above, there are several areas of note for tasking and subscriptions:

- MI_AcquisitionInformation provides an environment to relate strategic mission imperatives such as those in MI_Requirement to tactical ones such as MI_AcquisitionDate. This relationship should be properly documented.
- MI_ContextCode should be fulfilled to reflect the nature of the acquisition.
- QE_Usability is a way of identifying whether specific user requirements have been met and is part of 19115-2's quality section. It might be determined based on elements such as MD/MI_ImageDescription.
- If a subscription service is set up (as in a web service), it can be documented using ISO 19119.

Summary

When a granule is the result of a tasking request, the metadata can be entered under MI_Instrument MI_Operation, MI_Platform, MI_Objective (with support for objective types, fulfillment status and inclusion of EX_Extent), MI_Requirement (which includes MI_PriorityCode and MI_RequestedDate), MI_Plan (which includes MI_GeometryTypeCode)and, If the requirement relates to an event e.g. volcanic activity, flooding, it can be documented under MI_Event.